

City of Boston

RECYCLING STRATEGIC PLAN

Outline for Action

JANUARY 2001

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CITY OF BOSTON • MASSACHUSETTS

OFFICE OF THE MAYOR
THOMAS M. MENINO

Dear Friends,

I recently asked a youngster from Charlestown why he thought it is important to recycle. He said, "because it saves money and it makes our city clean". It reaffirmed my beliefs that if you want the honest and short answer to a question, ask a child. Recycling saves money. In fact, last year, the city saved \$2.3 million. It also saves natural resources, keeps our water and air cleaner, creates jobs, and keeps our city cleaner. But the most important reason we should recycle is that we want to leave our city a better place for our kids.

One of the first things I did when I became Mayor was to bring curbside recycling of newspapers to all neighborhoods of the city. Since then, we have expanded the program to include other papers, plastics, metals, leaf and yard waste. We pick up recycling at large apartment buildings and single-family homes. All are eligible to participate, but not all do. We need to do better.

I have learned in my years of public service that things work better when you work in partnership. They also most often work better when they are done incrementally. To attain the goal of increasing and improving our recycling efforts, I directed the City's Recycling Program to create a plan that outlines our key priorities and how to implement and manage them effectively.

Through the conscientious efforts of the Planning Team of residents, city agencies, community groups and recycling organizations, we have a comprehensive strategy to guide us over the next few years. Utilizing the work that City of Boston departments are doing and to build on the successes of community groups such as the Fenway Civic Association, residents involved with the Boston Neighborhood Recycling Coalition and Recycling Action, and community development corporations, like the Allston-Brighton CDC.

I am pleased to present the City of Boston Residential Recycling Plan and look forward to implementing the recommendations with you. I look to you to help with the partnerships we will need to increase public awareness and to increase the amount of materials that are recycled. I pledge to continue to work with tenant groups, neighborhood organizations and recycling groups and to challenge my administration to improve the work that we do.

Recycling works. It helps to keep our City clean, our environment healthy and to leave our City a better place for future generations, like my young friend from Charlestown. It works because of people like you who have and will continue to participate in this project, as well as those who participate by using our recycling programs. Without the help of you all, we would not be celebrating our successes and looking forward to a cleaner and healthier City.

Sincerely,

THOMAS M. MENINO
Mayor of Boston

leave me blank



photo caption for the truck

EXECUTIVE SUMMARY

The City of Boston's Residential Recycling Program (Recycling Program) has set a course for the next five years. Its mission is to make Boston an urban model for reducing, reusing and recycling residential waste while improving the environment in Boston's neighborhoods through maximum resident participation.

The Recycling Plan is a guide to increasing the tons recycled by 75%, and collecting 8 times the amount of leaf and yard waste by 2005.



One recycled aluminum can saves enough electricity to operate a television for 3 hours.

Every ton of recycled paper keeps almost 60 pounds of pollutants out of the atmosphere.

Recycling a glass bottle saves enough energy to light a 100-watt light bulb for 4 hours.

If the pilgrims had six-packs, we'd still have the plastic rings from them today.

The City has set diversion goals for its largest recycling programs; the weekly citywide curbside collection of over 30 household items (paper and commingled containers) and the seasonal curbside collection of leaf and yard waste. It has set recycling access goals for residents living in large apartment buildings and has proposed new programs for residential solid waste that is reusable or recyclable and cannot be handled under the City's current recycling and composting services.

RECYCLING DIVERSION GOALS

Service	Baseline Tons	2003 Tons	2005 Tons
Paper & Commingled Containers	17,497	24,500	30,600
Leaf & Yard Waste	1,260	3,000	10,000

Reduce, Reuse, Recycle: The three "R"s-- Reduce, Reuse and Recycle are important components of our ultimate goal of protecting our environment, preserving our natural resources and safeguarding our public health. Boston is committed to this plan and invites your participation in making Boston a model for urban recycling.

Key Action Items: The key priorities listed below combined with the continuation of existing recycling services will achieve these diversion goals. These action items along with the mission statement were developed based on information gathered from residents, recycling program staff, curbside recycling collection and processing contractors, state recycling officials, and other big city recycling programs.

- **Lead By Example:** Increase access to recycling services within municipal properties.
- **Outreach To Children:** Expand public education about the City's recycling services and how to use them fully, properly, and consistently.
- **Leaf and Yardwaste Collection Program:** Continue to increase tonnage collected.
- **Increase Large Apartment Building Program:** Build on our successes to further increase participation.
- **Household Hazardous Waste Collection Program:** Expand access for residents.

Boston residents recycle and compost more of their household waste every year. Since the inception of the weekly citywide multi-material curbside collection program in FY95, Boston residents have recycled 56% more of their households refuse. They have put out over four times the amount of leaf and yard waste for composting during our seasonal collections. Participation in our household hazardous waste (HHW) drop-off events and paint and motor oil recycling centers has doubled since 1996. In the last two years the City has saved \$5 million in solid waste disposal costs.



Look for the City's recycling guide in the mail.

Using recyclable materials rather than trashing them saves tax dollars better spent on other city services.



Millennium Park 1997-2000, The city's largest recycling project transforms a landfill into a 100-acre park

INTRODUCTION

In the late 1970's, citizens' concerns about the environment led to increased interest in recycling. More people became aware of the benefits of recycling. Landfill sites were at capacity and there was growing concern about where to put waste. It was clear that incineration was a less desirable option because it increased air pollution. Through recycling, we could cut the waste stream, reduce the need for landfill space and prevent further groundwater contamination from unlined landfills. More recycling means cleaner air and water. Also, people were becoming more inventive about how to use recycled materials in manufacturing. Recycled materials were being turned into a range of useful products. Manufacturing with recycled materials consumes less energy and preserves natural resources. More recycling means more jobs, from the haulers who pick up recyclables, to the people working in companies manufacturing products from waste, turning trash to cash.

By 1987, Boston residents organized drop-offs in several neighborhoods where residents could bring their household waste for recycling. The following

The City's recycling services expanded and by November 1994, weekly, multi-material curbside recycling collection service was available citywide. Since that time, the Recycling Program has broadened its scope.

The Recycling Program is supported by residents who volunteer as block and building captains, community and environmental organizations, City as well as state and federal agencies. The Recycling Program seeks grants on a regular basis. It has participated in the state recycling programs and has benefited significantly from the Executive Office of Environmental Affairs' Department of Environmental Protection's Recycling Equipment Grant Program and the Municipal Recycling Incentive Grant Program, and the Clean Environment Fund.

Boston Residents Recycle And Compost More Every Year:

Boston residents recycled 17,497 tons of material in the curbside collection program in FY99 and 19,383 tons in FY00, a 10% increase in one year. Since the inception of the Blue Bin curbside collection in FY95, Boston residents have recycled 56% more of their household refuse.

Using Public Works' seasonal curbside collection program, Boston residents composted 1,257 tons of leaves and yard waste in FY99 and 2,922 tons in FY00, doubling the tonnage in a year. Boston residents have composted over 4 times the amount of their yard waste since the inception of the Leaf and Yard Waste Collection Program in FY95.

At the four Public Works Surplus Paint and Used Motor Oil Recycling Centers, 1,230 Boston residents recycled 4,640 gallons of paint and motor oil in 1999 and reused 2,000 gallons of paint. In 2000, 1,578 residents recycled 3,240 gallons of paint and motor oil and reused 3,100 gallons of paint.

What is recycling?

- Separation of materials from the waste stream.
- Process and remanufacture those materials into new products
- Purchase the products made from the recycled materials

Why is recycling important?

- Conserves natural resources
- Conserves disposal capacity
- Reduces pollution
- Saves energy
- Can save money

Boston residents have increased their recycling by 56 percent since the inception of the program in FY95.

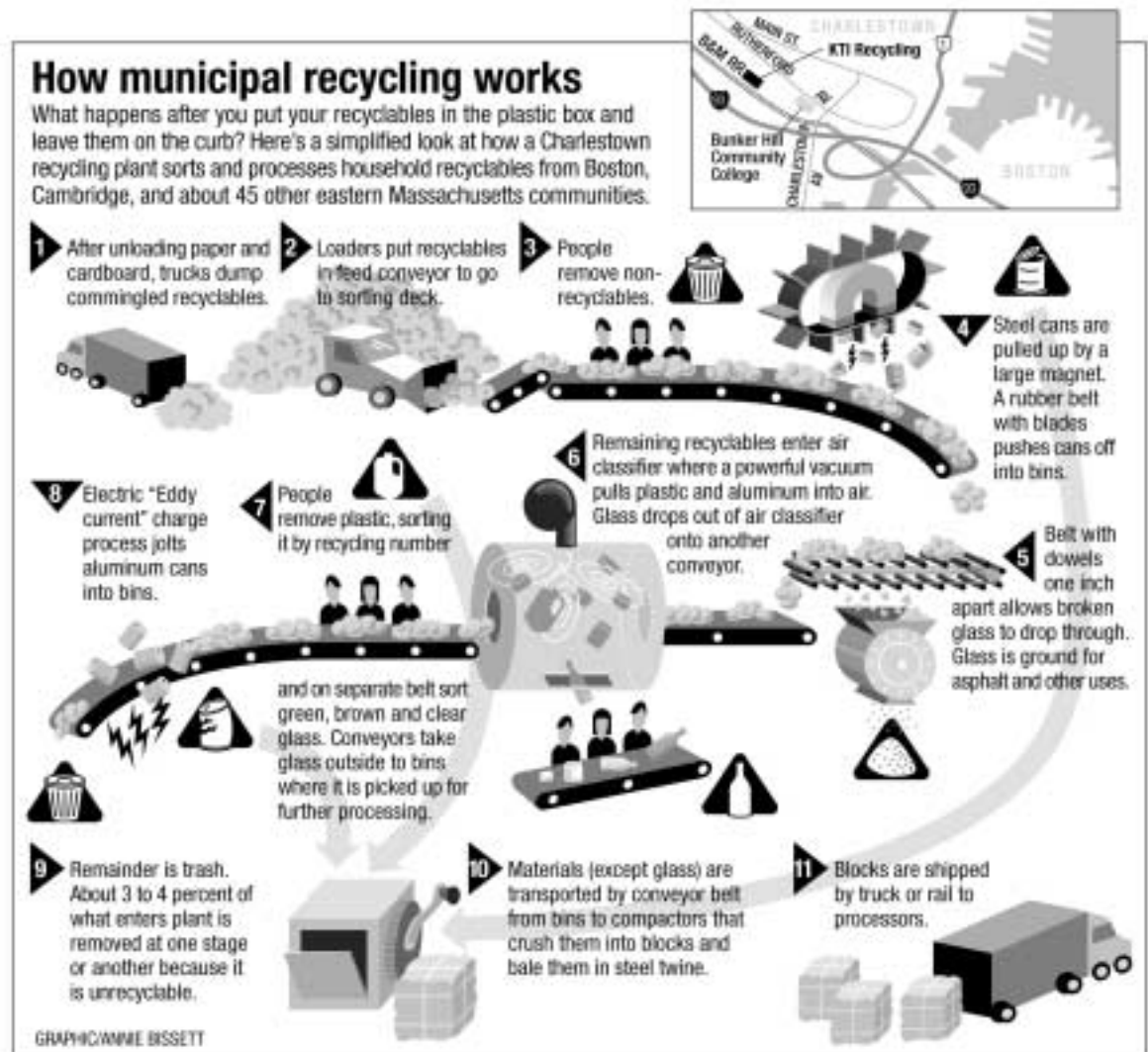
Boston residents have put out over four times the amount of leaves and yard waste for composting since FY95.

year, as other neighborhoods organized, the City of Boston entered into an agreement with recycling volunteers to manage these drop-offs.

Close to 3,000 residents have purchased compost bins through the Recycling Program's compost bin sale program, resulting in a reduction of an estimated 1,500 tons of organic waste per year. An additional 20,000 tons of scrap metals and bottle deposit material are also estimated to have been recycled by Boston residents in FY00.

"America, as 5 percent of the world's population, uses a third of the planet's resources and wastes up to 75 percent through inefficiency and lack of awareness. Since 35 percent of these resources are directly consumed by households and the rest influenced by our shopping practices, the lifestyle choices we make are significant."

-A Global Action Plan for the earth by David Gershon and Andrea Stern



RECYCLING MILESTONES

- **1987** Volunteers organized drop-offs in several neighborhoods where residents could recycle their newspapers and bottles.
- **1988** Boston entered into an agreement with the recycling volunteers to manage these monthly drop-offs.
- **1990** Boston passed a recycling ordinance and piloted a curbside collection program for 6,500 households in Jamaica Plain.
- **1992** Eight monthly drop-off recycling centers were operating throughout Boston.

"Recycling works. It helps to keep our City clean, our environment healthy and to leave our City a better place for future generations."

~Mayor Menino

- **1993** Boston launched a citywide, weekly collection of newspapers.
- **1994** Boston expanded its weekly, citywide collection program to include bottles cans and two types of plastic containers.
- **1995** Boston offered citywide weekly curbside collection of household recyclables to residents living in large apartment buildings. Boston offered a seasonal curbside collection of leaf and yard waste citywide.
- **1996** Boston added nine new items to the curbside collection program, and opened three permanent surplus paint and used motor oil recycling centers.
- **1997** Boston launched the Recycling Participation Campaign in East Boston which successfully increased recycling awareness among residents in a low-participation neighborhood. The Recycling Program opened a fourth surplus paint and used motor oil recycling center.
- **1998** Boston installed a playground made from recycled materials at the Haborside Community Center in East Boston as a reward for the neighborhood's recycling participation in the "Community Challenge" campaign. Boston expanded its Household Hazardous Waste Collection from once per year to twice per year. STRIVE, the Boston School Department's School-To-Career program, offers recycling collection to all Boston public schools.
- **1999** The City began cathode ray tubes (CRTs) recycling. CRTs are contained in televisions and computer monitors.
- **2000** The City began to provide recycling services to the Boston Housing Authority's developments. The City purchased \$627,000 worth of recycled and environmentally preferable products such as recycled copier paper, blue bins, compost bins, toilet paper and paper towels. The City expanded its seasonal yard waste collection program by two weeks.

Recycled plastic products conserve oil and natural gas, two non-renewable resources. -A guilt-free guide to garbage.

-Consumer Reports, February '94.

Recycled paper uses half as much water, saves 17 trees per ton and generates 74 percent less air pollution than paper made from trees and creates five times more jobs.

-Greenpeace Guide to Paper.

The tip fee for burning or burying Boston's residential waste is about \$70 per ton.

The tip fee for residents' recycling and composting is between \$0 and \$20 per ton.

Environmental and Economic Benefits: Increased participation in Boston's recycling has brought economic and environmental benefits to the City. In FY99, the 38,000 tons of materials recycled by Boston residents reduced the demand for landfill and incinerator capacity, saving \$2.3 million in disposal costs. In FY00, the 43,000 tons of materials recycled by Boston residents, is saving \$2.7 million in disposal costs. In addition, recycled materials in the Northeast help fuel a "\$44 billion industry with 13,000 recycling and re-use business establishments employing over 206,000 people and paying wages in excess of \$6.8 billion."¹ Recycled materials collected in Boston are used to manufacture recycled paper and steel and products such as plastic lumber, rubber mats, playground equipment and construction materials.

Some examples of the benefits realized by the 38,000 tons of material the City recycled in FY99 include:

- **Energy Savings:** Use of Boston's recycled materials in FY99 has saved an estimated 183 million BTU's, which is enough to heat the hot water in more than 9,000 Boston households for a year.^{2,3}
- **Improved Air and Water Quality:** Recycling activity by Boston residents resulted in reductions of an estimated 115,000 pounds of water pollutants and 1.3 million pounds of air pollutants from manufacturing activities, including 100,000 pounds of nitrous oxide and 84,000 pounds of sulfur oxides.⁴
- **Reduced Rate of Global Warming:** Boston residents reduced greenhouse gas emissions by 6,000 tons of carbon equivalent through recycling, reducing the rate of global warming worldwide.⁵

- **Avoided Environmental Degradation:** Recycling by Boston residents also reduced environmental damage caused by mining and logging. For example, by recycling approximately 5,500 tons of appliances, Boston reduced the need for mining nearly 6,900 tons of iron ore, 3,900 tons of coal, and 330 tons of limestone in one year alone.

The Future: While the Recycling Program has grown steadily over the past ten years, more can be done. Future trends in solid waste management involve waste reduction. The Recycling Program will continue to be involved in new solid waste management initiatives. Among the waste reduction trends are "product stewardship" and "extended producer responsibility." Environmentalists are advocating for industry to consider the environmental impact their products have in manufacturing, use and disposal, and that industry needs to be responsible for its products' environmental hazards. The Recycling Program will continue to partner with residents, environmental advocates, neighborhood groups, and members of the solid waste and recycling industry in order for Boston to be a model of urban recycling.

Recycling and composting has saved taxpayers \$5 million in avoided disposal costs in the last two years.

Product stewardship: Industry must consider the environmental impact their products have in their manufacturing, use and disposal.

¹ *Recycling Economic Information Study*, Northeast Recycling Council, Spring 2000.

² Based on average energy use of 20.2 million BTU's per single-family household Source: Energy Information Administration, Office of Energy Markets and End Use, 1997 Residential Energy Consumption Survey.

³ Conversion of recycling tons to BTUs saved based on Northeast Recycling Council estimates in Benefits of Recycling in Massachusetts.

⁴ Ibid.

⁵ Ibid.

SUMMARY OF BOSTON'S CURRENT RECYCLING & COMPOSTING PROGRAMS



Recycling Instructions

"At the KTI Recycling Facility in Charlestown, we process Boston's recycling for reuse by manufacturers in Boston and all over the world."

-Greg Appleton, KTI, Residential Sales Manager

The City is responsible for collecting residential waste only. Residents of Boston participate in the City's recycling services on a voluntary basis. Commercial and industrial waste and recycling collection are carried out by the private sector. Therefore, this Plan focuses on recycling from the residential waste stream.

Currently, the Recycling Program provides the following services for Boston residents:

Recycling Curbside Collection:

This weekly citywide collection program provides recycling for almost all household paper (newspaper, magazines, junk mail, telephone books, cardboard, etc.), and containers (made from glass, metal, aluminum, plastic, and aseptic packaging). Families in one to six unit homes are provided blue bins. Landlords of large apartment buildings who supply the appropriate recycling receptacles for their buildings also receive free recycling services.

Since the beginning of this program, residents have recycled 56% more of their trash. This increase is illustrated in Figure 1 "Material Collected by Boston's Blue Bin Curbside Recycling Program."

Residents learn about recycling in a number of ways by an annual citywide mailing of the Recycling Guide and by contact with their Block and/or Building Captain. The Recycling Program also issues press releases and does public service announcements on radio and cable television. Recycling Guides are also provided with blue bins when they are delivered to residents' homes. They are translated into Spanish, French, Chinese and



Resident participating in weekly curbside collection



Recycling truck



Glass, metal, and plastic containers are separated from paper in truck



The City's recycling program collects over 30 household items at the curb on a weekly basis.



Vietnamese and distributed to residents through the Mayor's neighborhood liaisons, the Mayor's Office of New Bostonians, community leaders and volunteers. Recycling information is printed weekly in 20 local newspapers.

Boston residents who participate in the Saturday leaf and yard waste collection program are helping to improve Boston's soil.



Look for this reminder on your doorknob

Leaf and Yard Waste Curbside

Collection: Public Works operates a citywide curbside yard waste collection program for six Saturdays in the fall and four Saturdays in the spring. Residents are required to put their yard waste in 30-gallon paper leaf bags or open barrels. The City collects leaves and yard waste, then hauls them to the City compost site. This program has had a positive impact on the health of Boston's soil. Its impact will grow significantly as more residents participate.

Residents leaves, grass clippings, weeds, and brush provide the City with the ingredients to produce compost. Compost is a natural fertilizer that adds nutrients to soil. It adds texture to soil and enables the earth to hold water during dry spells. It provides food for the microorganisms and earthworms, which do the work of turning leaves, grass clippings, food scraps, etc. into dirt. It helps fight plant diseases and adds nutrients slowly, giving plants a long-lasting dose of organic fertilizer.

Public Works also collects Christmas trees the first two weeks of January. Residents clean their Christmas trees of all decorations and put them out on trash day for a separate collection. The trees are hauled to the compost site where they are chipped. The pine chips are used as much by Franklin Park Zoo and the Parks Department.

Compost Site: The Public Works Department operates a compost site at the Massachusetts Audubon Society in Mattapan. Public Works collects leaf and yard waste from residents and deposits it at the site for composting.

Compost requires oxygen, water, carbon and nitrogen. Once this organic material is at the site, the Public Works staff spreads it into piles called windrows. The windrows are turned regularly for aeration and to distribute moisture. Carbon and nitrogen are also required to break down the material, both of which are contained in the leaves, grass clippings and the rest of the yard waste. Larger branches and shrubs must first be shredded. The organic material breaks down after about a year and a half. It is then sifted through a screen that leaves a fine, clean black dirt with natural nutrients. All composted soil is tested for nutrient and metal content.



Public Works front-end loader turning leaf pile at City compost site



Compost, nutritious dirt



Community gardeners
spreading City com-
post

The whole, natural fertilizer recycled by the leaves in Boston is a heroic step in reversing this. Please keep up this wonderful program, and please know how deeply appreciated your efforts are by the citizens of Boston.

– An excerpt from a letter we received from the utland/Washington Community Garden.

City Compost for Community Gardens: Public Works works in partnership with Garden Futures to arrange for the delivery of the matured compost to 100 Community Gardens across the City at no charge. In May and June, two times per week, 10-yard dump trucks deliver compost to the gardens. This is a great benefit to Boston gardens, which need nutritious soil amendments for the best and most natural growth of vegetables and flowers.



Home compost bins

Home Compost Bin Sale

Program: For residents who want to make their own compost, the Recycling Program sells compost bins for \$23, which is less than half their retail value. The compost bins are adjustable in size and can handle about 12 large bags of leaves. Residents can compost all their organic waste including food scraps. Bins have a top and bottom to prevent animals from getting at the compost. There are six sales outlets; Boston Community Centers in Allston-Brighton, Dorchester, Hyde Park, South Boston and West Roxbury; and the Boston Building Materials Coop in Mission Hill. To date, 3,000 residents have purchased compost bins through the City's compost bin sale program, reducing an estimated 1,500 tons of organic waste per year.

Surplus Paint and Used Motor Oil Recycling:

In 2000, the City of Boston was named the best paint re-use program in Massachusetts by the Executive Office of Environmental Affairs' (EOEA) Department of Environmental Protection (DEP). It was also a finalist for the City of Boston's Excellence Award.

The Recycling Program operates four Surplus Paint and Used Motor Oil Recycling Centers at Public Works Yards in Roxbury, Hyde Park, Allston-Brighton, and East Boston. They are open once a month on Saturdays from April through November.

Residents bring paint, stains, varnishes, polyurethane, solvents and motor oil to one of the City sites for recycling. Items that are in good condition are stored in our Swap Shop and made available to residents for free. Over the past two years, 50% of the incoming surplus paint and varnish has been given away to residents for reuse.

Since the program began in 1996, twice as many residents use the recycling centers bringing double the amount of paint and motor oil for recycling and reuse. In 1999, 1,230 Boston residents recycled 4,640 gallons paint and motor oil and reused 2,000 gallons of paint. In 2000, 1,578 residents recycled 3,240 gallons paint and motor oil and reused 3,100 gallons of paint.

Recycling In Large Apartment Buildings:

The City of Boston Public Works Department provides free recycling services to large apartment/condominium buildings whose landlords or property managers equip their buildings with recycling receptacles for mixed paper and commingled containers. The recycling services include: 1) weekly curbside collection of all household



paper and all household plastic, glass and metal containers, and 2) technical assistance for recycling program creation and implementation.

Award winning pains and surplus motor oil recycling team

Over the past three years, the Recycling Program has visited more than 500 large apartment buildings and has designed custom recycling programs to meet the needs of the each residential dwelling. The Recycling Program has conducted "How to Recycle in Large Apartment Buildings" workshops for landlords and property managers, mailed recycling information directly to large apartment building landlords and tenants citywide, and advertised in the local newspapers.



Surplus paint storage shed



Wheeled-carts used for apartment building recycling

Public Works now services 50% of the residents in large buildings with weekly curbside recycling collection. This accomplishment was achieved with the help of a number of community groups and city agencies; including, the Boston Neighborhood Recycling Coalition, Recycling Action, the Fenway Civic Association, the Allston/Brighton Community Development Corporation, the Boston Housing Authority, and a number of recycling building captains throughout the city.



Recycling Public Forum, January 2000

Block captains and building captains are needed in a neighborhood near you!

The Block/Building Captain: The Block (Captain) and Building Captain Program began when residents started a volunteer-run recycling program in 1988. Block and Building Captains differ in the area they serve; residential and multi-family respectively. From then until 1994, about 400 residents volunteered to teach their neighbors about recycling, staff the drop-offs, and worked with the City to provide curbside recycling services.

Presently, there are 80 Captains working in their neighborhoods to increase participation in recycling and composting services. They keep the Recycling Program abreast of service issues and opportunities. Many of the Captains established and are active in the Boston Neighborhood Recycling Coalition.

Recycling Education In Boston

Schools: The Recycling Program provides Boston's elementary and middle school students with recycling information which also instructs them on how to recycle at home. Professional environmental educators provide classroom presentations, classroom activity sheets for the teachers, and family activity sheets for the children to bring home for homework.

The Recycling Program also invites all the teachers to participate in the Recycling Education Assistance for the Public Schools (REAPS), a State-funded



Tree planting at the Haley School

program. Professional environmental educators come into the classroom and make presentations on recycling and other environmental issues for free.

The Boston School Department offers recycling services in all the public schools through the STRIVE/School-to-Career program. STRIVE stands for "Supported Training to Reach Independence through Vocational Experience." This is a vocational training for high school students with moderate to severe disabilities. STRIVE students collect and process recycling for all the schools' paper and cardboard and the polystyrene from the cafeterias.

Bi-Annual Household Hazardous Waste Drop-Off Days:

The Recycling Program holds Household Hazardous Waste (HHW) Drop-off Days in the spring and the fall on the University of Massachusetts Harbor Campus in Dorchester. Boston residents with proper identification can bring up to 50 pounds of hazardous products from their homes to this event. We accept household products that are labeled toxic, corrosive, flammable, and poisonous; including, insecticides, anti-freeze, pool supplies, mercury, propane



Household Hazardous Waste Drop-off Day at UMass, Dorchester

tanks, paint, motor oil, fluorescent lamps, televisions, computers, car batteries, and tires. The Recycling Program hires professional chemists and hazardous waste handlers to identify and sort the products brought by residents. We recycle all the items we can, such as paint, tires, motor oil, TVs, computers, etc. Items that can not be recycled are burned in hazardous waste incinerators.

These drop-off days provide residents with an opportunity to safely dispose of any unknown substances they have that may be potentially dangerous. We cannot accept explosives or radioactive materials.

The Recycling Program services between 300 and 500 households at the 1-day events. This past fall, over 800 households brought 10,000 pounds of televisions and computers, 5,000 gallons of paint and motor oil and over 500 propane tanks



Television and Computer

Recycling: In April 2000, the state DEP prohibited the disposal of cathode ray tubes (CRTs) from television and computer monitors at all Massachusetts's solid waste disposal facilities. The state took this action because the combustion of CRTs carries a potential public health risk. CRTs contain lead, which can contaminate incinerator ash and prevent its beneficial reuse. Televisions and computers are recyclable, and the ban helps promote the recycling of the leaded glass as well as the precious metals found in the units. DEP has provided municipalities with grant money to help pay for the recycling of CRTs.

The Recycling Program is using state grant funds to provide residents with two options to recycle their TVs and computers:

- Residents are encouraged to donate their computers and televisions to charity. The Recycling Program has partnerships with Goodwill Industries and the Salvation Army to collect the CRTs. Goodwill Industries' facility in Roxbury is a drop-off point for the CRTs. Salvation Army picks them up by appointment; or
- Residents can call Public Works Sanitation Department for an appointment for curbside collection of their television or computer monitor. Public Works collects CRTs the last week of each month.

In 2000, The Recycling Program has recycled over 226,000 pounds of residents' televisions and computers.



TVs collected for recycling



Bulldozer loading TVs and computers for recycling

CURBSIDE RECYCLING

One recycled aluminum can saves enough electricity to operate a television for 3 hours.

More than a half million trees are used to produce 88% of Sunday newspapers that are never recycled.

Americans discard enough aluminum to rebuild our entire commercial air fleet every 3 months.

The City has seen continual growth in the quantity of materials collected through all its recycling and composting programs. Figure 1 illustrates the growth that has occurred in the weekly curbside collection program. The quantities of materials collected have increased 56% since the program was implemented citywide in November 1994.

The amount of residential solid waste disposed has also increased annually but at a much slower rate. In FY95, Boston residents threw out 239,000 tons of trash. In FY00, 255,000 tons of trash was disposed. This represents a 7% increase in residential solid waste disposal.

FIGURE 1

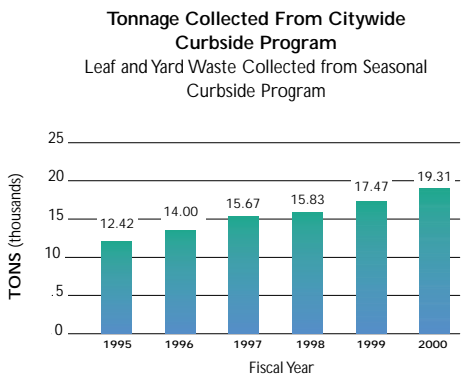
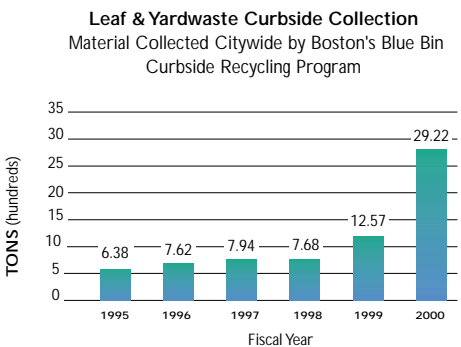


FIGURE 2



MATERIALS COLLECTED FY99 AND FY00 FOR RECYCLING AND COMPOSTING

Material in Tons	FY99	FY00
Mixed Paper Curbside and Drop-off	13,672	15,237
Commingled glass, metal and plastic containers, Curbside and Drop-off	3,825	4,192
Leaf Yard Waste	1,257	2,922
Appliances	5,578	5,022
Cathode Ray Tubes		113
Material in Gallons	FY99	FY00
Surplus Paint recycled	3,140	2,280
Surplus Paint reused	2,000	3,000
Used Motor Oil recycled	2,000	2,000

Recycling Rate, the Percentage Problem:

The dilemma of measuring the recycling rate is that although the measuring formula is standard, the type and the amount of material that can be recycled varies as well as policies for disposal. The Recycling Program offers recycling for more types of materials than most other municipalities, so one would think that this would produce a high recycling rate. However, the City also accepts a variety of household waste in its trash collection which most municipalities do not accept, such as household construction and demolition debris. This skews the true measure of our recycling. To better explain our recycling successes, we are basing our measurements on tonnage recycled.

Composition and Recovery:

During FY97 and FY98, Boston conducted recovery rate studies to better understand what materials were being recycled and disposed, and where the City should expend more efforts to educate residents about the available recycling programs.

Recovery rates, defined as the percentage of all recyclable material set out for recycling, were measured in East Boston, Roslindale and West Roxbury. Recyclable material set out for recycling

and for disposal were sorted and weighed from randomly selected households. A maximum sustainable recycling program is based on an 80% participation rate and a 70% capture rate of recyclables.

The results of the study showed that the maximum achievable recycling rate was 14.5% for West Roxbury and Roslindale and 13% for East Boston. These rates show that the City collects a significant amount of waste by weight, which cannot be recycled. Alternative uses for large household items and construction and demolition materials are investigated and promoted by the Recycling Program.

Mayor's America Recycles Day celebration at BHA development



Mission Statement: The mission of the Recycling Program is to make Boston an urban model for reducing, reusing and recycling residential waste and to improve environmental quality in Boston's neighborhoods through maximum resident participation.

Strategic Objectives:

- To increase awareness among Boston's population so as to increase their participation in the City's Recycling Program services, resulting in growth in the amount of refuse diverted to recycling.
- To expand the successful recycling models we have created in City agencies.

Measuring Progress: The progress of residential waste recycling and composting programs will be measured by the tons recycled and composted from the City's programs. These baseline totals for FY99 are shown below in Table 2. Goals for FY03 and FY05 are also shown in Table 2. These increases in tonnage represent the overarching goal of the Plan. Short term and long term goals designed to achieve specific priorities are identified below. Together, it is expected that these priorities, combined with continuation of existing recycling program services, will achieve the overall diversion goals specified in below.

RECYCLING DIVERSION GOALS

Service	Baseline Tons	2003 Tons	2005 Tons
Paper & Commingled Containers	17,497	24,500	30,600
Leaf & Yard Waste	1,260	3,000	10,000

Americans throw away enough office paper every year to build a 12-foot high wall of paper from New York to California.

Every ton of recycled paper saves approximately 4 barrels of oil, 4200 kilowatt hours of energy and enough energy to heat and air condition an average American home for almost six months.

Key Action Items: To meet the strategic objectives and recycling goals, the following action items and associated goals have been developed in order of priority.

- **Lead by Example: Expand access to recycling services within municipal properties.**
- **Outreach to Children:** Expand education about the City's recycling services and how to use them fully, properly and consistently.
- **Leaf and Yard Waste Collection Program:** Continue to increase tonnage collected.
- **Increase Large Apartment Building Program:** Build on our successes to further increase participation.
- **Household Hazardous Waste Collection Program:** Expand access for residents.

KEY ACTION ITEM 1:

Lead By Example: Expand Access To Recycling Services Within Municipal Properties

Background: Many residents participate in the recycling programs offered by the City of Boston, with an increasing amount of material being diverted from the waste stream every year. A key to greater participation is greater awareness of recycling benefits both locally and globally.

One of the best methods for the City to raise awareness is to demonstrate its value. The City sets an example with



Mayor's Earth Day celebration at the Haley School

paper recycling programs in many municipal buildings, including the schools. These programs save the City thousands of dollars annually in avoided disposal costs. The Recycling Program can act as a catalyst throughout City government, helping each agency think through how it can reduce waste and increase recycling and purchases of recycled and environmentally preferable products.

On Earth Day 2000, Mayor Menino issued a report entitled "A Building That Teaches" that announced the design of the George Robert White Nature Center, which will be built on the campus of the Massachusetts Audubon Society's Wildlife Sanctuary (former Boston State Hospital) in Mattapan. The City, in partnership with the Massachusetts Audubon Society, has designed a green building that will be a regional model for environmentally-sustainable construction in Boston. The Nature Center will house the Nature Center staff, provide office, program and classroom space. Emphasis will be placed on serving Boston's children, especially the 25,000 students who attend school within two miles of the site.

Goals:

1.1 • Increase Opportunities For Recycling Within City Departments:

The Recycling Program will continue outreach and coordination with Department Heads and Managers about the benefits of recycling, and explain the opportunities available to increase recycling in their departments. Agencies will designate staff to be responsible for overseeing recycling in that agency. The Recycling Program will make sure the proper recycling bins are provided and that the space needs are assessed for each department.

Every ton of steel recycled saves 2,000 pounds of iron ore, 1,400 pounds of coal and 120 pounds of limestone.

1.2 • Increase Recycling Tonnage In City Buildings: To reach this goal, our first step will be to gather data on the materials that are and are not recycled and on the tons recycled from municipal buildings. Next we will identify improvements to the program such as providing recycling bins at all city office work stations, printers and copy machines.

1.3 • Increase The Purchase Of Recycled Or Environmentally Preferable Products By City Agencies: Use of the purchasing power of the City can create more demand for recycled and environmentally preferable products. In FY95, the City's purchasing agent established a buy-recycled policy. In FY99, the City purchased \$221,000 worth of recycled products and in FY00, the City purchased \$627,000 in recycled products; including, copier paper, playground



Playground equipment made from recycled materials, East Boston

equipment, planters, printing paper, toilet paper, paper towels, recycling and compost bins. The Recycling Program will offer an annual workshop for City departments' Purchasing Agents to educate them how they can purchase recycled products. The Recycling Program will make sure that City Purchasing Agents will continue to be encouraged to buy off the Commonwealth's contracts for environmentally-preferable products.

A recycling bin at every work station in City Hall by 2002

1.4 • Incorporate The Mayor's Recycling Message At Appropriate Events Throughout The Year: The Mayor celebrates the City's recycling efforts on Earth Day each spring and America Recycles Day each fall. During Earth Day 2000, Mayor Menino led a tour of the City's compost site for community gardeners, environmentalists, and government and business officials. The compost site is located at the Massachusetts Audubon Society in Mattapan, near the site of the George Robert White Nature Center.



The Recycling Program will work with point people in City departments to identify other public events for the Mayor to incorporate the City's recycling message.

1.5 • Develop A Uniform Recycling Message About The Importance Of Recycling: Over the next year, the Recycling Program will develop a media strategy to promote the environmental and economic benefits of recycling. City officials will be invited to help deliver these messages to residents via radio, television and print media promotional campaigns. The messages will be delivered as paid advertisements and public services announcements.

KEY ACTION ITEM 2:

Outreach To Children: Expand Public Education About The City's Recycling Services And How To Use Them Fully, Properly And Consistently

Background: The challenge is to increase residents' awareness of the broad range of recycling services and their use. It is also important to make sure that residents know how to use these services fully, properly, and consistently.

One of the most important groups to reach with recycling environmental education is children. Reaching children will help instill an environmental ethic that will guide them through the rest of their lives. Moreover, children can often bring to their families' knowledge about the importance of recycling and how to recycle. Therefore, a major focus in the next five years will be on school children.



STRIVE School-to-Career students collecting recycling from Brighton High School classrooms



Michael Coleman, Grade 3, Roger Clay School, Dorchester

Poster for MassRecycle Calendar



BHA kids from Charlestown Boys & Girls Club

The Boston School Department offers recycling services in all the schools through the STRIVE/School to Career Program.

Goals:

2.1 • Increase The Tonnage Of Recyclables Collected From Boston Public Schools: The Recycling Program has partnered with the Boston School Department to begin a "School Recycling Incentive Program" where the schools will be paid for every ton they recycle. Funding for this program will come from the Recycling Program's participation in the state DEP's "Municipal Recycling Incentive Program". From April through October 2000, the School Department recycled 600 tons of paper and polystyrene. In FY02, the goal is to increase the tonnage recycled by 5%.

2.2 • Increase Recycling

Education In Classrooms: The Recycling Program will also provide environmental education in the classrooms by continuing to encourage teachers to participate in the DEP's Recycling Education Assistance in the Public Schools (REAPS) grant program. This program funds professional environmental educators to do classroom presentations on recycling and composting. The goal is to increase REAPS participation and to supplement with teachers' classroom activity guide and teaching materials to get students interested in recycling. The students will receive a family activity workbook to show children how to recycle at home. And the reward for completing the activity sheet, will be memberships to local museums.

2.3 • Inform All New Residents Of Boston The City's Recycling Program:

The goal is to mail recycling information directly to new residents on a regular basis. The Recycling Program will continue to participate in the City's efforts to welcome its new residents and notify them of the services available to them. Recycling is part of Mayor Menino's "Welcome to the Neighborhood" program. The Mayor holds informal meetings in neighborhoods for new residents to welcome them and provide information on City services. The Recycling Program coordinates with the Mayor's Office of New Bostonians by providing recycling information in several languages and by participating in their events. The Recycling Program also provides recycling to the Mayor's Boston Home Center program.

2.4 • Continue To Develop Recycling Program Public Education For Residents:

We will continue to carry out and assess the effectiveness of existing Recycling Program education efforts and will

- Use the City's informational kiosks that are located in public places across the City;
- Use of more visual print and television media messages;
- Publish fact sheets on the benefits of recycling, composting, and proper Household Hazardous Waste (HHW) management;
- Billboards;
- Information sheets on proper preparation of rubbish and recyclables;
- Phone banking;
- Feature stories in neighborhood newspapers;
- Blue bin stickers that list recycling dos and don'ts;
- More translated materials; and, Partnerships with the Assessing and Water and Sewer Departments to include recycling information in tax and water bills



KEY ACTION ITEM 3:

Leaf And Yard Waste Collection

Program: Continue To Increase Tonnage Collected

Background: A significant portion of residential waste is from leaves and yard debris. For the past five years, Public Works has collected this organic material from residents on Saturdays for four weeks in the spring and four weeks in the fall. This material is brought to the City's compost site for composting. In the spring, Public Works delivers the

Residents' leaves, grass clippings, weeds and brush provide the City with the ingredients to produce compost.



Screener screening compost at City compost site

The Public Works Department delivers 1000 yards of compost to 100 community gardens each year at no charge. This compost is valued at \$30,000.

matured compost to 100 community gardens across the city to be used as a natural fertilizer. The leaves and yard waste diverted for composting increased significantly last year with new commitments on the part of Public Works and its haulers to collect more and cleaner yard waste at the curbside. As greater public education and curbside collecting efforts produce more yard waste collections, the Public Works composting site will need to be upgraded to accommodate more material. The usable space within the boundaries of the compost site increased by almost 50% by the site improvements that were made recently. The City will continue to make site improvements along to keep up the anticipated growth in tonnage being deposited at the site.

Participation in the Saturday-mornings-beginning-at -7 A.M. leaf and yard waste collections continues to grow. Residents put out double the amount of leaves and yard waste in FY00 over the previous year. We are looking at ways to further increase participation.

Goals:

3.1 • Investigate Alternative Options For Leaf And Yard Waste Collections: This fall the Commissioner of Public Works extended the leaf and yard waste collection by two weeks.

Public Works will investigate the costs of more frequent and alternative collection time options so that it can implement a cost-effective and convenient collection strategy as part of its new contract. Among the possible options that may be considered are a Sunday collection, and an extended Saturday collection.

3.2 • Increase Awareness Of The Leaf And Yard Waste Collection Program: The Recycling Program will work with the neighborhood hardware stores that supply leaf and lawn bags and provide them with printed information about the collection program to be given out with the sale of bags.

3.3 • Increase Backyard Composting: The Recycling Program will continue to promote backyard composting by selling home compost bins and educating residents about home composting options and methods. The Recycling Program will partner with composting experts to conduct a workshop for residents in Boston. An FY02 goal is to sell 200 compost bins.

3.4 • Increasing The Amount Of Compost: By FY05 the Recycling Program will identify a site for public access to free compost. This will serve not only to provide more and better services to our communities, but also will also increase awareness of the program and lead to greater participation.

Site improvements at the City's compost site have increased capacity by 50%.

Compost is a natural fertilizer that adds nutrients to soil.

Close to 3000 Boston residents have purchased compost bins, which has reduced an estimated 1500 tons of organic waste per year.

"Backyard composting is easier than we thought, especially using the City's compost bins."

~Boston compost workshop attendees

KEY ACTION ITEM 4:

Increase The Large Apartment Building Program: Build On Our Successes To Further Increase Participation.

Background: The City offers free recycling services to residents in large apartment and/or condominium buildings. The owners need only provide recycling receptacles. Boston is a very densely populated city with 32% of the housing stock being large apartment or condominium buildings, defined as 6 units or more. Our geographic limitations create the small neighborhood atmosphere that makes Boston such a unique and desirable city, but at the same time, it presents challenges to recycling. Without cost to the owner, the Recycling Program staff will visit a building and design a customized recycling program. Over the past three years, more than 500 buildings have been visited as a result of this effort.

The Boston Housing Authority (BHA) owns close to 20% of the large building housing stock in the City. Thirty-seven of these buildings are elderly housing. The City Environmental Services Cabinet Chief and the Commissioner of Public Works worked with the Administrator of the BHA along with the residents and managers of the elderly buildings and brought them on line for recycling in August 2000. The Recycling Program worked in collaboration with the Appalachian Mountain Club to publicize this new program and had some of the youngsters from the BHA's Bunker Hill family development in Charlestown come to draw posters to announce the program in these buildings. The Mayor recognized everyone's efforts at a public event on November 15th, and announced that as a result, the City now offers recycling in more than 50% of our large apartment buildings.

Goals:

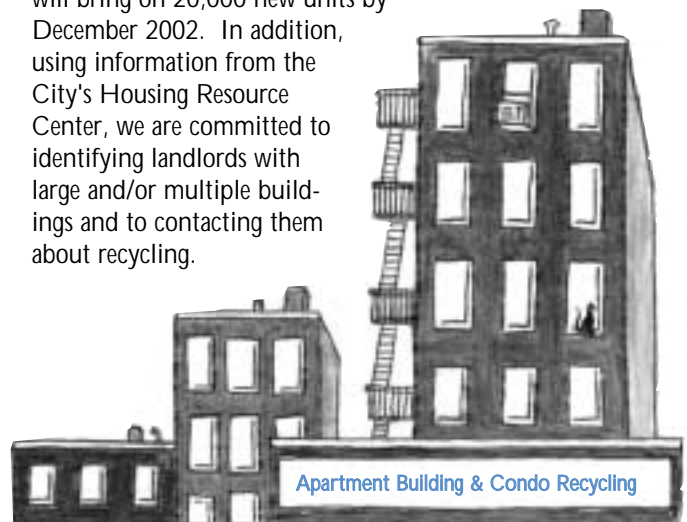
4.1 • Extend Recycling Services To 100% Of The Residents In City-Owned Housing

Developments By 2002: The BHA has made a commitment to bring all 15,000 units of family development housing on-line by December 2002. We will build on the model created for the elderly developments of working with the Executive Director of the BHA, building managers, residents and local youth on the mechanics and benefits of recycling. The Recycling Program will secure funding for the recycling receptacles for recycling will be provided by the state EOEA.

4.2 • Extend Recycling Services To 75% Of The Residents In Large Apartment Buildings By 2002:

We know from our work with the BHA that we can successfully create a program that suits the needs of large building management and tenants. With assistance of owners and managers of buildings that receive federal and/or state subsidies we will identify key people to work with on establishing recycling within the buildings bring them on line. This will bring on 20,000 new units by December 2002. In addition, using information from the City's Housing Resource Center, we are committed to identifying landlords with large and/or multiple buildings and to contacting them about recycling.

Boston Housing Authority offers recycling in 37 developments.



4.3 • Methods To Reach Out To Large Apartment Building Owners/Managers:

Using resources of the Housing Resource Center we will identify property owners of large buildings. We will invite a group of these owners/managers along with the owners/managers of the subsidized buildings to a meeting at City Hall with the Cabinet Chief of Environmental Services to explain why their participation is important and the environmental and economic benefits of recycling. At this meeting we will ask for the owners/managers to identify who the point person(s) who will work with the Recycling Program to establish recycling programs in their buildings.

The Recycling Program will be available to address property owner organizations such as the Greater Boston Residential Housing Association and the Building Owners and Managers Association to make a presentation about the importance and advantages of recycling at a meeting of their membership.

We have been successful in working with owners/managers to establish programs in their buildings. Once we have established contacts in non-participating buildings, we will bring them together to participate in a how to recycle workshop. This will be followed by site visits to the properties by the city's recycling specialist.

The Mayor recognizes the importance of giving recognition and support to owners/managers who offer recycling. We will award an "Environmentally Friendly" label to participating buildings. This can be used in advertising and display, allowing potential residents to consider this as part of their criteria when choosing housing.

The Recycling Program will continue to participate in the State Department of Environmental Protection's Municipal Recycling Incentive Program (MRIP) in order to help fund these efforts.

4.4 • Methods To Reach Out To Residents In Large Apartment Buildings:

The Recycling Program will continue to partner with neighborhood associations and support the expansion of the Building Captain program to reach out to residents about the importance of recycling and how they can participate. This will be a good resource for the City to determine which buildings are not participating so we can directly approach the owners/managers.

Not all residents in large apartment buildings who have access to recycling do recycle. Again, Building Captains can approach their neighbors with information about recycling such as what can be recycled, how and where.

Through annual mailings, we will reach out to all tenants informing them of recycling opportunities and urging them to contact their property owner/manager.

Using community newspapers, the municipal Cable station, and the City's informational kiosks located throughout the neighborhoods, we can provide information on services to many residents who are unaware of the recycling services the City offers.

KEY ACTION ITEM 5:

Household Hazardous Waste Collection Program: Further Expand Access For Residents

Residents bring surplus paint, stains, varnishes, polyurethane, solvents and used motor oil to the City's 4 recycling centers.

Over the past 2 years, 50% of the incoming paint at the recycling centers has been given away to residents for reuse.

The City holds 2 household hazardous waste drop-off days in every year. One in the spring and one in the fall.

Background: Public Works yards in four neighborhoods are open on Saturdays 9:00 A.M. to 1:00 P.M., between April and November to receive surplus paint products and used motor oil. The Recycling and Public Works staff has been trained in state and federal environmental and safety requirements for operating a paint and motor oil recycling center and identifying household hazardous products.

Separately, the Recycling Program operates a Household Hazardous Waste drop-off at two 1-day events per year. Over the last three years since the inception of the program, 2,500 households have cleaned their cellar of unwanted hazardous materials.

Household products can contain ingredients that are hazardous to human health and the environment if they are mishandled. Products that are labeled toxic, flammable, corrosive or irritants are considered hazardous. Boston residents have a number of options for safely handling their household hazardous products.

The Recycling Program promotes the paint and motor oil recycling and the household hazardous waste drop-off days in the following manner:

What is Household Hazardous Waste?

- *Products labeled toxic, flammable, corrosive, and irritant*
- *Household products that contain hazardous ingredients can be harmful to human health and the environment if they are mishandled.*

- City-wide direct mail.
- Weekly press releases.
- Weekly Sunday Globe community bulletin board in City Section.
- Feature stories.
- Advertisement in water bill including translated materials.
- Mailing to Community Development Corporations.
- Mailing to Homeless Shelters.
- Neighborhood meetings.
- Mayor's neighborhood liaisons.

Goals:

5.0 • Facilitate The Safe Management Of Household Hazardous Waste:

Residents have responded very favorably to this program. To meet the demand created, the Recycling Program needs to identify ways to facilitate the services provided. Increasing residents' awareness of what products are hazardous will result in residents bringing fewer items that cannot be accepted resulting in a more efficient service. This will cut down on residents having to wait in long lines. This will be accomplished by providing educational information using handouts, press releases and mailings about what products are accepted at the collection sites.

5.1 • Evaluate The Benefits And Costs Of Expanding Drop-Off Options For Household Hazardous Waste:

The Recycling Program will assess the opportunities, cost and benefits to adding more services for the disposal of HHW and paint and motor oil. We will investigate increasing operating hours and number of drop-off locations



Look for this paint and motor oil recycling guide in your mailbox

APPENDIX A

How the Plan Was Developed:

Under the direction of the Mayor, the Chief of Environmental Services and the Commissioner of Public Works, the Director of the Recycling Program initiated the Plan in November 1999.

Through a competitive bid, DSM/LeCain consultants were hired to help design and manage the planning process and to draft the plan. A Planning Team was formed gaining participation from many City departments and from several key stakeholders to the Recycling Program. DSM/LeCain worked with the Planning Team on November 30 and December 9, 1999 and on January 19, January 20, February 22 and March 15, 2000 to undertake the modified planning process.

During the planning process the Team refined the Recycling Program mission statement to define the long term, overall purpose for the Recycling Program and began to articulate a vision for the Recycling Program that identified what the results would be if the Program was successful in carrying out their work. The Planning Team then defined the Key Action Items or long-term (5-year) goal for the Recycling Program. The Planning Team then identified the critical issues facing the Recycling Program and developed ways to address these challenges. These became key priorities of the Plan. Next, they developed and prioritized goals for each strategic priority. Finally, the Team worked with DSM/LeCain to identify specific action steps for each goal and the necessary resources to carry out each action step.

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DSM/LeCain also performed research, gathered information from residents and conducted stakeholder interviews to provide necessary background information to develop this Plan. This information gathering and data analysis included the following components.

First, stakeholder surveys were designed for use over the telephone to interview different types of stakeholders. Four stakeholder groups (residents, recycling program staff, curbside recycling collection contractors and state recycling officials) were interviewed during the first two weeks of January 2000. A total of 26 residents were surveyed to represent the eleven different neighborhoods in the City. Four state recycling officials were surveyed to gain their views of Boston's program and what they believed should be done to improve the program. The two recycling collection contractors were surveyed to determine the barriers to performing recycling collection and methods that they might suggest in improving participation and recovery rates. Finally, all four Recycling Program staff members were surveyed to determine the barriers to carrying out programs and recommended methods to improve the Recycling Program.

Second, a public forum was held at City Hall in January 2000 to gather input from interested residents regarding their views on the critical issues facing Boston's Recycling program and the best methods to address these issues. Forty-five residents attended the meeting and provided valuable input to the strategic plan including prioritizing what they believed were the best methods to improve Boston's Recycling Program.

Third, Boston's Recycling Program was an agenda item at three neighborhood meetings in early January 2000. These were held with the Beacon Hill Civic Association, the Fenway Civic Association and St. Marks Civic Association. Attendees were asked to comment on the City's recycling services and what methods they thought were necessary to strengthen the Recycling Program.

Fourth, DSM analyzed data available from the City of Boston on the quantity of material recycled, composted and disposed by collection district, the number of large apartment buildings using the recycling collection service, and the costs of curbside recycling and leaf and yard waste collection and waste disposal. This provided valuable benchmark data for setting goals for Boston's Recycling Program.

Finally, DSM conducted extensive benchmark surveys of three other cities of similar demographics. Surveys were conducted with San Francisco, Cincinnati and Minneapolis Recycling Program Managers to benchmark Boston's recycling and composting programs/services against those operated by cities of similar demographics.

Acknowledgments:

This Plan was authored by the Planning Team (listed on the previous page) and consultants DSM Environmental Services, Ascutney Vermont and Eleanor M. LeCain, LeCain Associates, Boston Massachusetts. The City of Boston would like to thank the residents of Boston, the Boston Neighborhood Recycling Coalition, Garden Futures, the Fenway Civic Association, Beacon Hill Civic Association, and St Marks Civic Association for their contributions and guidance in developing this plan. City officials responsible for the plan include:

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Photographs
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Fun Recycling Facts:

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